Amendments to the Claims:

Claim 1 (previously presented): An ultrasound medical treatment system comprising:

a) an ultrasound medical-treatment transducer; and

b) a controller which powers the transducer to deliver ultrasound at an ultrasound acoustic power for or beyond an in vivo treatment time to thermally ablate patient tissue in vivo, wherein the controller determines the in vivo treatment time from a mathematical function of an experimentally-determined in vitro treatment time for the transducer to deliver ultrasound at the ultrasound acoustic power for the in vitro treatment time to thermally ablate patient tissue in vitro, and wherein the mathematical function includes blood perfusion rate and patient tissue density.

Claim 2 (previously presented): The ultrasound medical treatment system of claim 1, wherein the in vivo treatment time is calculated from the following equation:

$$time^{in\ vivo} = -\frac{\rho}{w}\ln[1-\frac{(T_{\text{threshold}}-T_o^{in\ vivo})\,w\,time^{in\ vitro}}{(T_{\text{threshold}}-T_o^{in\ vitro})\,\rho}],$$

wherein $time^{in\ vivo}$ is the in vivo treatment time to form an in vivo lesion, $time^{in\ vitro}$ is the in vitro treatment time to form an in vitro lesion, ρ is the patient tissue density, w is the blood perfusion rate, $T_{\text{threshold}}$ is the temperature threshold for tissue ablation, $T_o^{in\ vivo}$ is the initial in vivo patient tissue temperature, and $T_o^{in\ vitro}$ is the initial in vitro patient tissue temperature.

Claim 3 (previously presented): An ultrasound medical treatment system comprising:

a) an ultrasound medical-treatment transducer; and

b) a controller which powers the transducer to deliver ultrasound at or above in vivo ultrasound acoustic power for a treatment time to thermally ablate patient tissue in vivo, wherein the controller determines the in vivo ultrasound acoustic power from a mathematical function of an experimentally-determined in vitro ultrasound acoustic power for the transducer to deliver ultrasound at the in vitro ultrasound acoustic power for the treatment time to thermally ablate

patient tissue in vitro, and wherein the mathematical function includes blood perfusion rate and patient tissue density.

Claim 4 (previously presented): The ultrasound medical treatment system of claim 3, wherein the in vivo ultrasound acoustic power is calculated from the following equation:

$$q^{\,in\ vivo} = \frac{(T_{\text{threshold}} - T_o^{in\ vivo})}{(T_{\text{threshold}} - T_o^{in\ vitro})} \frac{w\ time/\rho}{(1 - e^{-w\ time/\rho})} q^{\,in\ vitro},$$

wherein $q^{\,in\ vivo}$ is the in vivo ultrasound acoustic power (i.e., heat deposition density) to form an in vivo lesion, $q^{\,in\ vitro}$ is the in vitro ultrasound acoustic power to form an in vitro lesion, *time* is the same in vivo and in vitro treatment time to form a lesion, ρ is the patient tissue density, w is the blood perfusion rate, $T_{\text{threshold}}$ is the temperature threshold for tissue ablation, $T_o^{in\ vivo}$ is the initial in vivo patient tissue temperature, and $T_o^{in\ vitro}$ is the initial in vitro patient tissue temperature Celsius.

Claim 5 (canceled)

Claim 6 (previously presented): A method for thermally ablating patient tissue in vivo comprising the steps of:

a) obtaining an ultrasound medical treatment system including an ultrasound medical-treatment transducer and a controller which powers the transducer to deliver ultrasound to thermally ablate patient tissue;

b) experimentally determining an in vitro treatment time for the transducer to be powered by the controller to deliver ultrasound at an ultrasound acoustic power to thermally ablate patient tissue in vitro;

c) determining an in vivo treatment time as a mathematical function of the in vitro treatment time, wherein the mathematical function includes blood perfusion rate and patient tissue density; and

d) using the controller to power the transducer to deliver ultrasound at the ultrasound acoustic power for or beyond the in vivo treatment time to thermally ablate patient tissue in vivo.

Claim 7 (previously presented): The method of claim 6, wherein the in vivo treatment time in step c) is calculated from the following equation:

$$time^{in\ vivo} = -\frac{\rho}{w}\ln[1-\frac{(T_{\text{threshold}}-T_o^{in\ vivo})\,w\ time^{in\ vitro}}{(T_{\text{threshold}}-T_o^{in\ vitro})\,\rho}],$$

wherein $time^{in\ vivo}$ is the in vivo treatment time to form an in vivo lesion, $time^{in\ vitro}$ is the in vitro treatment time to form an in vitro lesion, ρ is the patient tissue density, w is the blood perfusion rate, $T_{\text{threshold}}$ is the temperature threshold for tissue ablation, $T_o^{in\ vivo}$ is the initial in vivo patient tissue temperature, and $T_o^{in\ vitro}$ is the initial in vitro patient tissue temperature.

Claim 8 (previously presented): A method for thermally ablating patient tissue in vivo comprising the steps of:

a) obtaining an ultrasound medical treatment system including an ultrasound medical-treatment transducer and a controller which powers the transducer to deliver ultrasound to thermally ablate patient tissue;

b) experimentally determining an in vitro ultrasound acoustic power for the transducer to be powered by the controller to deliver ultrasound for a treatment time to thermally ablate patient tissue in vitro;

c) determining an in vivo ultrasound acoustic power as a mathematical function of the in vitro ultrasound acoustic power, wherein the mathematical function includes blood perfusion rate and patient tissue density; and

d) using the controller to power the transducer to deliver ultrasound at or above the in vivo ultrasound acoustic power for the treatment time to thermally ablate patient tissue in vivo.

Claim 9 (previously presented): The method of claim 8, wherein the in vivo ultrasound acoustic power in step c) is calculated from the following equation:

$$\mathrm{q}^{in\ vivo} = \frac{(T_{\text{threshold}}-T_o^{in\ vivo})}{(T_{\text{threshold}}-T_o^{in\ vitro})}\,\frac{w\ time/\rho}{(1-e^{-w\,time/\rho})}\,\mathrm{q}^{in\ vitro},$$

wherein $\mathrm{q}^{in\ vivo}$ is the in vivo ultrasound acoustic power (i.e., heat deposition density) to form an

in vivo lesion, $q^{in\ vitro}$ is the in vitro ultrasound acoustic power to form an in vitro lesion, *time* is the same in vivo and in vitro treatment time to form a lesion, ρ is the patient tissue density, w is the blood perfusion rate, $T_{\text{threshold}}$ is the temperature threshold for tissue ablation, $T_o^{in\ vivo}$ is the initial in vivo patient tissue temperature, and $T_o^{in\ vitro}$ is the initial in vitro patient tissue temperature Celsius.

Claim 10 (canceled)

Claim 11 (new): The ultrasound medical treatment system of claim 1, wherein the in vitro treatment time is 55 seconds or more.

Claim 12 (new): The method of claim 6, wherein the in vitro treatment time is 55 seconds or more.

Claim 13 (new): The ultrasound medical treatment system of claim 3, wherein the treatment time is longer than 55 seconds.

Claim 14 (new): The method of 8, wherein the treatment time is longer than 55 seconds.